Claims

1. A magnetic resonance imaging apparatus including:

measurement control means for dividing a k space into a high repetitive-frequency measurement area containing an origin of the k space and measured at a high frequency and a plurality of low repetitive-frequency measurement areas not containing the origin and measured at a low repetitive-frequency, and obtaining k space data by repeating measurement of said high repetitive-frequency measurement area and measurement of each of said low repetitive-frequency measurement areas between said measurements;

signal processing means for reconstructing an image by using the k space data; and

display means for displaying the resulting image;

wherein said signal processing means acquires a time phase evaluation value from said high repetitive-frequency measurement area, determines a time phase at which said time phase evaluation value reaches a predetermined threshold value or greater, selects the high repetitive-frequency measurement area containing said time phase and at least one low repetitive-frequency measurement area measured time-wise close to said high repetitive-frequency measurement area as an image reconstruction set and executes image reconstruction by using the k space data of said image reconstruction set.

2. A magnetic resonance imaging apparatus according

to claim 1, wherein at least one low repetitive-frequency measurement area constituting said image reconstruction set is a measurement area measured immediately before or immediately after said high repetitive-frequency measurement area constituting said image reconstruction set.

3. A magnetic resonance imaging apparatus according to claim 1, wherein selection of each of said measurement areas constituting said image reconstruction set is made in such a manner as to contain the whole area of the k space.

4. A magnetic resonance imaging apparatus according to claim 1, wherein said measurement control means controls a measurement sequence of each of said measurement areas in such a manner that a measurement period of said high repetitive-frequency measurement area contains said time phase.

5. A magnetic resonance imaging apparatus according to claim 4, wherein said signal processing means predicts a timing of said time phase from a time change of said time phase evaluation value, and said measurement control means controls the measurement sequence of each of said measurement areas on the basis of the timing predicted.

6. A magnetic resonance imaging apparatus according to claim 1, wherein said signal processing means determines said time phase after repetition of said measurements.

7. A magnetic resonance imaging apparatus according

to claim 1, wherein said time phase evaluation value is a substantial peak value of the k space data in said high repetitive-frequency measurement area.

8. A magnetic resonance imaging apparatus according to claim 1, wherein said time phase evaluation value is an addition value of data obtained after one-dimensional data in a read direction containing the origin of the k space in said high repetitive-frequency measurement area is subjected to Fourier transform.

9. A magnetic resonance imaging apparatus according to claim 7, wherein said threshold value is at least 1.8 times a base line value of said time phase evaluation value.

10. A magnetic resonance imaging apparatus according to claim 7, wherein said threshold value is at least 80% of a maximum value of said time phase evaluation value.

11. A magnetic resonance imaging apparatus according to claim 1, wherein said display means displays in a time series said time phase evaluation values.

12. A magnetic resonance imaging apparatus according to claim 11, wherein said display means displays a signal intensity change curve approximately representing time changes by connecting the time phase evaluation values displayed in the time series.

13. A magnetic resonance imaging apparatus according to claim 11, wherein said display means has means for setting

said threshold value.

14. A magnetic resonance imaging apparatus according to claim 11, wherein said display means has means for designating said time phase, and said signal processing means selects said high repetitive-frequency measurement area closest to said time phase designated.

15. A magnetic resonance imaging apparatus according to claim 11, wherein said display means displays a measurement sequence of each of said measurement areas and its measurement time by using the same time axis as the display of said time phase evaluation value.

16. A magnetic resonance imaging apparatus according to claim 15, wherein said display means has means capable of selecting each of said measurement areas constituting said image reconstruction set.

17. A magnetic resonance imaging apparatus according to claim 15, wherein said display means differs display of each of said measurement areas selected from display of other measurement areas not selected.

18. A magnetic resonance imaging apparatus according to claim 1, wherein said k space data is data on which concentration information of a contrast medium injected to said subject is reflected, said image contains a blood vessel image of said subject and said time phase is a time phase in which the artery is emphasized by said contrast agent.

19. A magnetic resonance imaging apparatus according to claim 1, wherein said k space is a three-dimensional space that comprises a slice encode direction, a phase encode direction and a readout direction, and division of said k space is division by a plane parallel to said readout direction.

20. A magnetic resonance imaging apparatus according to claim 19, wherein said image processing executes a projection processing on a two-dimensional plane after three-dimensional reconstruction.

21. A magnetic resonance imaging method comprising:

a division step of dividing a k space into a high repetitive-frequency measurement area containing an origin of said k space and measured at a high repetitive-frequency and a plurality of low frequency measurement areas not containing said origin and measured at a low repetitive-frequency;

a measurement control step of repeating measurement of said high repetitive-frequency measurement area and measurement of each of said low repetitive-frequency measurement areas between said measurements of said high-repetitive frequency measurement area and conducting measurement of a plurality of k space data;

a step of conducting image reconstruction by using said k space data; and

a step of displaying the resulting image;

wherein said measurement control step includes a step

of acquiring a time phase evaluation value from said high frequency measurement area, a step of determining a time phase in which said time phase evaluation value is a predetermined threshold value or greater, a step of selecting said high repetitive-frequency measurement area containing said time phase and at least one low repetitive-frequency measurement area measured close time-wise to said high repetitive-frequency measurement area as an image reconstruction set, and a step of conducting said image reconstruction by using the k space data of said image reconstruction set.